tient. Recently our center has modified its study protocol to assess the efficaccy of agitated saline contrast in transthoracic echo (TTE) in order to reserve TEE for difficult cases.
Methods: We have studied 32 patients with a suspicion of PFO, 53% female. The study protocol begins with a TTE with agitated saline contrast (ASC) and a small amount of blood (0.3cc) in basal situation and with Valsalva maneuver followed by TEE with ASC to confirm the previous finds. The predominant cardiovascular risk factor was smoking (33%) and Hypertension (15%). Only 9% of patients presented moderate structural heart disease. Clinical condition that led to the study was non-severe stroke in 40% patients, transient ischemic attack in 28%, atrial septal aneurism (ASA) in 21%, migraine in 6% and peripheral emboli in 3%. 53% of patients were taking aspirine at the moment of the study. RESULTS: The total incidence of ASA was 62%. We found PFO in 62% of patients. TTE showed right lo left shunt in 18 patients (16 patients confirmed by TEE) 11 patients showed no bubble aparition in the left sided of the heart by TTE (the same result was seen in 9 patients by TEE and the other two showed mild shunt). There was 3 hesitant results by TTE-ASC due to difficult accoustic window but TEE was only slightly positive in 1 patient.
Results: Summarized in table 1. In our study TTE with agitated saline contrast showed a predicitve positive value (PPV) of 88% and a negative predictive value of 81.8%. Until now we have performed percutaneous closure of PFO in 15 patiet with no complications and all the patients are free of events during the follow up of 15±3 months.
Conclusion: TTE is a effective technique to study PFO with a high PPV (after a short learning curve), easy to use and with the advantage of so many repetitions as necessary with no disturbances for the patient.so, TEE can be reserved for doubtful patients.

Table 1. Results of both techniques

	POSITIVE	NEGATIVE	DOUBT
TTE	18	11	3
TEE	16 + 2 -	9 - 2+	1+ 2-

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Transthoracic echocardiography with harmonic imaging - a new method in diagnosing of patent foramen ovale

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Transthoracic echocardiography with harmonic imaging - a new method in diagnosing patent foramen ovale.
Transesophageal electrocardiography (TEE) still remains a method of choice for the detection of patent foramen ovale (PFO).
Objective of the study: Comparison of the diagnostic power of transthoracic echocardiography with harmonic imaging (TTESH), transcranial Doppler ultrasound (TCD) and TEE in diagnosing of PFO.
Methods: 44 subjects (29 females), aged 43.5±1.71, with migraine headache with aura and/or cryptogenic stroke were entered the study. Each of them was taken TCD, TTESH and TEE with saline contrast and provocation by Valsalva maneuver. The degree of shunt flow was defined on a four-stage, semiquantitive scale (TCD: 0=no signal, 1=minimal, 2=intermediate, 3=massive shunts, TEE and TTESH: 0=no signal, 1=1-10, 2=10-25, 3≥25 bubbles). Right heart catheterization taken under control of TEE and angioscopy was a referential method. The predictive power of the examined methods was calculated by multiple logistic regression. The cut-off values, sensitivity and specificity were reckoned in receiver operating characteristic (ROC) curve analysis. Positive (PPV) and negative (NPV) predictive values, were set on the basis of 30% prevalence of PFO.
Results: The ROC curve analysis results are shown in the table. The regression analysis revealed that TCD has the highest accuracy in detecting of PFO, OR=3.19 (1.26-8.08), p=0.014. In patients (n=21) with documented focal ischemic changes in cerebral imaging studies - computed tomography or magnetic resonance (CTMRplus) the same analysis revealed TTESH as a highest accuracy method: OR=4.29 (1.04-17.74), p=0.044.
Conclusions: TTESH might have a similar accuracy to TEE and TCD especially in diagnosing PFO in patients with cryptogenic stroke.

Table 1. TCD, TTESH and TEE - ROC curve analysis

METHOD	Cut-off for AUC	value difference	p	Sensitivity (%)	Specificity (%)	PPV (%)	NPV (%)
TCD	>0	0.0002		96.0	46.2	43.3	96.4
TTESH	>2	0.0043		52.2	88.9	66.8	81.3
TEE	>0	0.0169		96.6	38.5	40.2	96.3
TCD in patients CTMRplus	>0	0.001		92.9	83.3	70.5	96.5
TTESH in patients CTMRplus	>2	0.0012		53.3	100.0	100.0	41.7
TEE in patients CTMRplus	>0	0.0062		93.3	50.0	44.4	94.6

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Should routine echocardiography be performed in all patients with stroke?

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Background and purpose: Cardiogenic embolism accounts for 15% to 30% of ischemic strokes. The value of routine use of echocardiography (echo) among patients with stroke remains controversial. We evaluated the diagnostic yield of routine echo in unselected patients with acute ischemic stroke.
Methods: Consecutive patients with ischemic stroke or a transient ischemic attack were included. Transthoracic echo (TTE) was performed in all patients, complemented by transesophageal echo (TEE) in selected patients
Results: 807 echocardiographic examinations (743 TTE and 64 TEE) were performed in 775 consecutive patients. A potential cardiac source of embolism (CSE) was found in 144 (18%) of the patients. The most frequent potential CSE included atrial fibrillation (7%) and patent foramen ovale (6%). Results were more likely to have impact on therapeutic decisions in younger patients. Numbers needed to test (NNT) for detection of CSE increased tenfold from 6 in patients <50 years to 62 in patients aged >70 years.
Conclusion: Echo may provide important information on the etiology of ischemic stroke. However, echocardiographic screening for a cardiac source of embolism is not warranted in all patients. In stroke patients younger than 50 years, echo has a higher diagnostic yield and should routinely be performed. In older patients, routine echo results in a high rate of unspecific findings, and echo should be applied selectively.

Table 1

Age groups (years)	<30 n=19	30-50 n=121	50-70 n=329	>70 n=306	Total n=775
Atrial fibrillation	-	1 (0.8%)	11 (3%)	38 (12%)	50 (7%)
Patent foramen ovale (PFO)	3 (16%)	18 (15%)	14 (4%)	8 (3%)	43 (6%)
Atrial septal aneurysm (ASA)	-	6 (5%)	16 (5%)	12 (4%)	34 (4%)
PFO + ASA	-	9 (7%)	5 (1.5%)	7 (2%)	21 (3%)
Cardiac thrombus	-	-	8 (2.4%)	4 (1.3%)	12 (1.5%)
Complex aortic atherosclerosis	-	-	5 (1.5%)	4 (1.3%)	9 (1.2%)
Left ventricular ejection fraction <30%	-	-	3 (0.9%)	1 (0.3%)	4 (0.5%)
Any CSE	3 (16%)	29 (21%)	47 (14%)	65 (21%)	144 (18%)
Direct therapeutic impact	3 (16%)	22 (18%)	23 (7%)	5 (1.6%)	53 (7%)
NNT	6	6	14	63	14

CSE according to age groups.

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Despite of the lack of thrombus left atrial and left atrial appendage stasis can predict cerebrovascular events

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Cardioembolic stroke is associated with LA and LAA dysfunction. We supposed that LV and LAA dysfunction can predict cerebrovascular event despite of the lack of thrombus.
The aim of this study was to compare the blood flow and the myocardial velocity parameters of the LAA in patients with atrial fibrillation to those with sinus rhythm with spontaneous contrast and to relate them to cerebrovascular events (stroke or TIA).
Methods: The study group consisted of 578 nonrandomized patients referred for TEE between 2002-2005. Among them were 249 patients with atrial fibrillation (151 acute, 98 chronic) and 24 with sinus rhythm who presented with spontaneous contrast. Control group consisted of 25 patients with normal TEE findings. Conventional transthoracic echocardiogram was performed and immediately was followed by transesophageal examination. The measurements included: flow velocities and myocardial velocities in the LAA, spontaneous echocontrast and thrombus. LAA late systolic /MVI SW and late diastolic /MVI DW/ wave velocities were obtained from the lateral wall of the LAA. In 34 patients thrombus in LA and LAA were detected and they were excluded.
Results: The results are shown in the table1. The flow velocities and the myocardial velocities in the patients from the three groups differed significantly with the control group and between themselves as well (p< 0.05). The group with AF and spontaneous contrast had the most depressed LAA function and more commonly presented with an embolic event (p<0.001).
Conclusions: Left artial and left atrial appendage dysfunction is associated more frequently with cardiovascular events even when there is no thrombus formation.

Table 1

	CONTROL GROUP	I gr. SR and SEC	IIgr. AF without SEC	III gr. AF and SEC
n	25	24	169	66
LAA EV	59.7±14.2	41.4±15.2	33.4±15.4	31.7±15.26
MVI SW	16.86±4.8	15.01±5.1	12.75±5.2	10.17± 5.33
CVE	0	2	13	20